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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/725,795

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Chieh Ou-Yang

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EXAMINER

JOLLEY, KIRSTEN

ART UNIT

PAPER NUMBER

1762

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/16/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/725,795

Applicant(s)

OU-YANG, CHIEH

Examiner

Kirsten C. Jolley

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Amended claims 8-13 are now examined in response to their conversion to process claims.
2. The objections to the specification and claim 2 have been withdrawn in response to Applicant's amendments.
3. The 35 USC 112, 1<sup>st</sup> paragraph rejections have been withdrawn in response to Applicant's amendments to the claims and arguments.
4. The 35 USC 102(b) rejections over Kim et al. and Thakur have been withdrawn in response to Applicant's amendments to the claims requiring that a temperature gradient is created and that thermal conditioning is effected by directing a stream of heated or cooled gas to the upper surface of the substrate.
5. Applicant's arguments filed December 21, 2006 have been fully considered but they are not persuasive. With respect to the Shirley reference, Applicant argues that Shirley does not disclose or suggest placing a heat/cold source above the substrate, and only teaches that temperature control is effected from underneath the substrate. The Examiner disagrees. In col. 4, lines 20-27, Shirley teaches alternate embodiments of its invention whereby orifices for dispensing cooling/heating gas can be positioned proximate to the front (upper) side of the substrate, rather than the back side, to transfer heat directly to or from the front side. Therefore the claims remain rejected over the Shirley reference for the reasons disclosed in detail below.

***Drawings***

6. The replacement drawing sheet was received on December 21, 2006. This drawing is accepted.

***Claim Objections***

7. Claims 2-3 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 2 and 3 are directed to limitations already present in amended independent claim 1. (It is noted that claims 6 and 7 depend from claim 2.)

***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 4-5, 11, and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 is vague and indefinite because it contradicts the independent claim. Claim 1 requires that thermal conditioning is effected by directing a stream of heated or cooled gas to the substrate, whereas claim 4 requires that thermal conditioning is effected by a source of electromagnetic radiation. It is noted that the specification does not disclose that the two sources

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of thermal conditioning (heated or cooled gas and electromagnetic radiation) can be used in combination in an apparatus, therefore claim 4 appears to contradict independent claim 1.

Claim 11 is vague and indefinite for similar reasons since it discloses that the thermal source may be a source of radiation, a lamp, or an IR radiator, which is contradictory to independent claim 1.

Claim 13 recites the limitation "the arm" in line 2. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claim 14 is rejected under 35 U.S.C. 102(b) as being anticipated by Shirley (US 6,322,626).

Shirley discloses a method of distributing a viscous liquid over a surface of a substrate by a spin coating process comprising: placing a substrate horizontal on a support; applying a viscous liquid onto a surface of the substrate; rotating the substrate to distribute the liquid radially outwards; and a step of conditioning the substrate thermally and locally on a chill plate by creating a local temperature gradient, wherein the thermal conditioning is effected by directing a stream of heated or cooled gas from a source placed above the surface of the substrate. Column 4, lines 20-27 disclose that orifices 55a of the chill plate, which apply heated

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or cooled gas, can be positioned proximate to the front (upper) side of the substrate 72 rather than the back side 71.

***Claim Rejections - 35 USC § 102/103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1-3, 6-8, and 11 rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Shirley.

Shirley is applied for its teachings discussed above in section 11. Independent claim 1 requires that the coating liquid already applied on the substrate is conditioned thermally. Shirley teaches, with respect to the chill plate section of the apparatus, that orifices 55a which apply heated or cooled gas can be positioned proximate to the front (upper) side of the substrate 72 rather than the back side 71. While Shirley's chill plate is most often used to heat or cool the substrate prior to coating, Shirley also teaches in col. 3, lines 27-29 that the chill plate assembly can cool the substrate *after* the substrate receives a coating of primer in a high temperature process. Additionally, in col. 5, lines 10-14, Shirley teaches that the bowl temperature controller of the coating assembly can include a plurality of heat exchangers and manifolds arranged in a manner "generally similar to that discussed above with reference to the plate temperature controller 50a" of the chill plate assembly. Thus, it is the Examiner's position that Shirley teaches both cooling the substrate using the claimed method in Shirley's chill plate assembly

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after a coating is applied, and coating the substrate in Shirley's coater assembly using the claimed method of selective thermal conditioning by directing a stream of heated or cooled gas to the substrate from above the substrate surface.

Alternatively, it would have been obvious to one having ordinary skill in the art to have incorporated the optional embodiments of the chill plate assembly (such as positioning the orifices above the substrate rather than below the substrate) in Shirley's coater assembly, thus supplying heating or cooling during and/or after liquid application, with the expectation of similar and successful results because both Shirley's chill plate and coater assemblies have similar structures, effects, and purposes -- to similarly provide heating or cooling to selected areas of a substrate.

As to claims 6-7, Shirley teaches the use of sub-sources directed to different positions on the radius of the substrate.

As to claim 8, Shirley's substrate is supported on a rotatable support, with liquid dispensing means provided above the substrate surface. While Shirley does not illustrate the disclosed embodiment where cooling and heating means are provided above the substrate, there would necessarily be fastening means for the thermal source(s) because it is not possible for the thermal means to float unsupported above a substrate.

***Claim Rejections - 35 USC § 103***

14. Claims 10 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shirley.

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As to claims 10 and 13, it would have been obvious to one having ordinary skill in the art to have provided the thermal means above the substrate on an arm because use of an arm to hold a dispenser over the top of a substrate is well known in the spin coating art, particularly since Shirley illustrates the use of an arm to hold the liquid dispenser above the substrate. Further it would have been obvious to have made the arm movable so that the substrate can be easily placed in and removed from the coater assembly. As to claim 12, it would have been obvious to have mechanically affixed the liquid dispensing means to the thermal fastening means in order to minimize and simplify the number of parts on the coater assembly.

15. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shirley as applied to claims 1 and 8 above, and further in view of Mandal et al. (US 6,238,735) or Kim et al. (US 5,932,009).

Shirley lacks the teaching of a cover extending over the rotatable support. The Examiner notes that use of a cover over a spin coating apparatus is very well known in the art. Mandal et al. and Kim et al. are cited to demonstrate the conventionality of a cover to provide an enclosed process space. It would have been obvious for one having ordinary skill in the art to have used a cover in the spin coating apparatus of Shirley in order to insulate the process space and prevent all the cooling and/or heating gases from dissipating before they can effectively cool/heat the substrate.

### ***Conclusion***



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16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

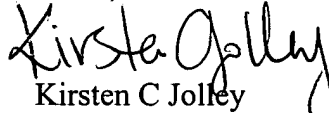
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirsten C. Jolley whose telephone number is 571-272-1421. The examiner can normally be reached on Monday to Wednesday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Kirsten C Jolley  
Primary Examiner  
Art Unit 1762

kej